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CARTOGRAPHIC EVALUATION OF SKYLAB-A S-192 SCANNER IMAGES

EREP Investigation Number 497

Period Covered: 1 August 1973 - 31 October 1973

NASA Purchase Order T-4111B
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Quarterly Progress Report

Publication authorized by the Director, U.S. Geological Survey

(a) Overall Status

Skylab S-192 screening film was received for the following sites on the dates indicated:

Task Site 933669 - Chesapeake Bay	August 8
Task Site 933136 - San Francisco	August 10
Task Site 933396 - Dakotas	September 20

In addition to the S-192 film, the following backup data has been received:

Task Site 933396 - S-190A frames 10-235 to 246
11- 219 to 230
12-219 to 230
S-190B frames 81-310 to 322
EREP Data Books - S-192, S-190A, and S-190B

Task Site 933136 - S-190A frames 4-117 to 119
S-192 Magnetic Tape - line straightened data
S-193 Magnetic Tape and hardcopy
EREP Data Books - S-190A, S-192, and S-193

Task Site 933669 - S-190A frames 16-168 to 178
17-160 to 170
18-160 to 170
EREP Data Books - S-190A, S-192, and S-193

Skylab Instrumentation Calibration Data Book, Volume IV

S-192 Production Film Converter Software Requirements, SH-09814

Earth Resources Production Processing Requirements for EREP Electronic Sensors, PHO-TR524

Inspection of the three strips of S-192 screening film resulted in the following evaluation:

Task Site 933669 - Chesapeake Bay

The imagery is of rather low quality due to high atmospheric haze conditions. The data are unacceptable for the investigation.

Task Site 933136 - San Francisco Bay

The imagery, particularly channel 9, is quite good with rather high definition. Channels 2 and 11 had a large number of data dropouts however,

Task Site 933136 - San Francisco Bay (continued)

On August 16, an order was placed for radiometrically corrected imagery of channels 7 and 9, and a color composite of channels 3, 5, and 7 to simulate color infrared film. To date these data have not been received. A magnetic tape of line straightened S-192 data was received but has not been used because the P.I. has no capability to generate images from the tape. The usefulness of the S-193 data will be evaluated later.

Task Site 933396 - Dakotas

The imagery appears to be of fair quality and could be useful for the investigation. However, no additional imagery will be ordered at this time.

In addition to the above data, the P.I. had an opportunity to view S-192 screening data of the Phoenix-Tucson area, while in Houston in August. As a result, radiometrically corrected imagery and scan line straightened imagery were ordered. To date, none of these data have been received.

The S-190A photographs and topographic maps of the San Francisco Bay area are being used to identify potential ground control points. This work will continue and be expanded to include the Phoenix-Tucson area. Further work must await the receipt of S-192 imagery.

While in Houston in August, the P.I. discussed the S-192 image generation system with Milo Keathley, FOD. Computer programs for removing geometric distortions from scanner images were discussed with M. Rader and R. Malhotra, Mapping Sciences Branch. They have made considerable progress on this problem and their programs may prove useful for this investigation.

(b) Actions Required

Further progress on this investigation is dependent on early receipt of the S-192 imagery. The noise problem in the S-192 system, which was referred to in the PIMO memorandum of October 11, should not seriously affect this investigation. However, more detailed and higher quality imagery than the screening film must be examined to fully evaluate the usefulness of the imagery.

(c) Expected Accomplishments During Next Reporting Period

Assuming early receipt of the S-192 imagery the following tasks will be accomplished during the next reporting period:

1. Detailed inspection of the imagery and evaluation of its usefulness for the investigation.
2. Selection of ground control points on the S-192 data.
3. Measurement of point coordinates.
4. Preliminary computer transformation of the measured points to fit control.
5. Start the evaluation of the cartographic quality of the imagery.

(d) Significant Results

None

(e) Summary Outlook for Remaining Effort

The preliminary selection of sites to be studied has been completed and imagery has been ordered. The entire measurement and analysis program outlined in the proposal and statement of work remain to be done.

(f) Travel Summary and Plans

The P.I. travelled to Johnson Space Center on August 28 through 31, in connection with other Skylab responsibilities and discussed the items

mentioned above under (a) with NASA personnel. No travel for this investigation is planned for the next reporting period.